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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/415,901	10/08/1999	NITIN VAIDYA	1018.051US1	5437

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EXAMINER

RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 07/14/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/415,901

Applicant(s)

VAIDYA ET AL.

Examiner

Daniel J. Ryman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 12.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.
2. The indicated allowability of claims 5, 7, 9-11, 21, 23, and 25-27 is withdrawn in view of the newly discovered reference(s) to Yang et al (USPN 5,905,730) and Bonomi et al (USPN 5,831,971). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 5, 11, 21, 27, 28, 37, 40, and 49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 5, 11, 21, 27, 28, 37, 40, and 49 state that the virtual clock is updated to the start tag of the packet upon determining that the start tag exceeds the virtual clock. As worded, claims 5, 11, 21, 27, 28, 37, 40, and 49 dictate that any time the start tag exceeds the virtual clock then the virtual clock will be corrected to match the start tag. The specification discloses that the virtual clock is updated only when a packet is transmitted from a node onto a link (page 13, lines 14-16). For the purposes of prior art rejections, Examiner will interpret claims 5, 11, 21, 27, 28, 37,

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40, and 49 to read “updating the virtual clock, when a packet is transmitted from a node onto a link, to the start tag of the packet upon determining that the start tag exceeds the virtual clock”.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-9, 11-17, 19-25, 27-28, 30-33, 35-40, 42-45, and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al (USPN 5,905,730) in view of Tout et al (USPN 5,991,295).

7. Regarding claims 1, 12, 15, and 17, Yang discloses a computer-implemented method for distributed fair scheduling comprising: determining a virtual start time for a packet based on a time value (arrival time) (col. 2, lines 22-26); determining a back-off interval (time until virtual finish time) based on at least the virtual start time of the packet (col. 2, lines 22-32); counting from the back-off interval to a predetermined transmission time (virtual finish time) (col. 2, lines 22-32); and, transmitting the packet upon counting from the back-off interval to the predetermined transmission time (col. 2, lines 22-32). Yang possibly does not expressly disclose that the packet is tagged with a start tag based on a time value. Tout teaches using internal tags, within a switch, where a switch is a network device which uses scheduling, to attach to a packet any information needed by the switch about a particular packet (col. 1, lines 39-52). It would have been obvious to one of ordinary skill at the time of the invention to tag the packet with a

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start tag (virtual start time) based on a time value (arrival time) in order to convey the virtual start time of the packet to the other elements in the device.

8. Regarding claims 3, 19, 30, 35, 42, and 47, referring to claims 1, 17, 28, 33, 40, and 45, Yang in view of Tout discloses receiving the packet at a node for transmission therefrom (Yang: col. 2, line 66-col. 3, line 5).

9. Regarding claims 4, 20, 36, and 48, referring to claims 1, 17, 33, and 45, Yang in view of Tout discloses resetting a virtual clock (Yang: col. 4, lines 63-67).

10. Regarding claims 5, 11, 21, 27, 28, 37, 40, and 49, referring to claims 4, 9, 20, 25, 36, and 48, Yang in view of Tout discloses that the system virtual time “always keeps up with the virtual start time of the packet being served” (Yang: col. 5, lines 50-63). Yang in view of Tout possibly does not expressly disclose updating the virtual clock, when a packet is transmitted from a node onto a link, to the start tag of the packet upon determining that the start tag exceeds the virtual clock; however, this would have been obvious to one of ordinary skill in the art at the time of the invention. By having one packet transmitted after another, the system efficiently utilizes its bandwidth. In order to do this, the start time of one packet must closely follow after the finish time of a preceding packet. It would have been obvious to one of ordinary skill in the art at the time of the invention to update the virtual clock, when a packet is transmitted from a node onto a link, to the start tag of the packet upon determining that the start tag exceeds the virtual clock in order to ensure that the current packet begins its transmission immediately following the end of the transmission of the previous packet such that the system efficiently uses its bandwidth.

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11. Regarding claims 6, 22, 31, 38, 43, and 50, referring to claims 4, 20, 28, 36, 40, and 48, Yang in view of Tout discloses that determining a back-off interval comprises determining the back-off interval based on also the virtual clock (Yang: col. 2, lines 16-37 and col. 4, lines 63-67).

12. Regarding claims 7, 9, 23, 25, 33, and 45, referring to claims 1 and 17, Yang in view of Tout discloses that the start tag is determined based upon, among other things, the finish time of the previous packet (Yang: col. 2, lines 22-26); however, Yang in view of Tout does not disclose how the finish time of the previous packet is used in determining the start tag of the current packet. While Yang in view of Tout possibly does not expressly disclose tagging a packet with a start tag comprises determining the start tag as greater of a virtual clock and a finish tag of a previous packet, this step would have been obvious to one of ordinary skill in the art. The finish tag of the previous packet is the time when the transmission of the previous packet should be finished. By determining the start tag as greater of a virtual clock and a finish tag of a previous packet, the device avoids collisions by ensuring that it will not start transmitting a packet before a previous packet has finished transmitting. It would have been obvious to one of ordinary skill in the art at the time of the invention to determine the start tag as greater of a virtual clock and a finish tag of a previous packet in order to avoid causing a collision between a current and a previous packet.

13. Regarding claims 8, 14, 16, 24, 32, 39, 44, and 51, referring to claims 1, 12, 15, 17, 28, 33, 40, and 45, Yang in view of Tout discloses that the predetermined transmission time is zero (Yang: col. 4, lines 63-67 and col. 5, lines 31-35).

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14. Regarding claim 13, referring to claim 12, Yang in view of Tout discloses that each node comprises a controller (packet scheduler) at which the packet for the node is received for transmission through the link (Yang: col. 2, lines 16-32).

15. Claims 2, 10, 18, 26, 29, 34, 41, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al (USPN 5,905,730) in view of Tout et al (USPN 5,991,295) as applied to claims 1, 9, 17, 25, 28, 33, 40, and 45, above, and further in view of Bonomi et al (USPN 5,831,971).

16. Regarding claims 2, 10, 18, 26, 29, 34, 41, and 46, referring to claims 1, 9, 17, 25, 28, 33, 40, and 45, Yang in view of Tout possibly does not expressly disclose determining whether a collision occurred between the packet and another packet. Bonomi teaches that collisions can occur in fair scheduling systems because in fair scheduling systems multiple sessions compete for the same outgoing link (col. 3, lines 54-56 and col. 5, lines 35-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to determine whether a collision occurred between the packet and another packet in order to ensure that all packets are successfully transmitted. Yang in view of Tout in further view of Bonomi possibly does not expressly disclose that upon determining that a collision occurred, determining a new back-off interval, and transmitting the packet upon counting from the new back-off interval to a new predetermined transmission time; however, such steps would be obvious to one of ordinary skill in the art. If two packets have collided, then neither packet is successfully transmitted. In order to ensure a proper transmission of each packet, it would have been obvious to one of ordinary skill in the art at the time of the invention to reattempt transmission by determining a new back-off interval to a new predetermine transmission time.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-6743 for regular communications and (703)308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Daniel J. Ryman
Examiner
Art Unit 2665

DJR
Daniel J. Ryman
July 8, 2003


HUY D. VU
SUPERVISORY PATENT EXAMINER
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